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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/883,239	06/19/2001	Keisuke Chino	07409.0022	9556

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EXAMINER

WILSON, DONALD R

ART UNIT

PAPER NUMBER

1713

DATE MAILED: 05/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/883,239

Applicant(s)

CHINO ET AL.

Examiner

Donald R Wilson

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 4,7,14,15 and 18-23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5,6,8-13,16 and 17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 11.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION**Response to Restriction/Election Requirement**

1. Applicant's elections of the inventions of Group I, Claims 1-13 and 16-23 in Paper No. 5, and the species of:

(a) polymer 12, i.e., maleic anhydride modified ethylene-propylene-ethylidenenorbornene interpolymer which has been further reacted with 3-amino-1,2,4-triazole, as the thermoplastic polymer comprising side chains having a carbonyl-containing group and a nitrogen-containing heterocycle-containing group, and

(b) no metal compound present as the compound containing a metal element, in Papers No. 7 and 10, is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction or election of species requirement, the elections have been treated as an election without traverse (MPEP § 818.03(a)).

2. Claims 14-15 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention. Claims 4, 7 and 18-23 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected specie of the elected group of inventions.

Claim Rejections - 35 USC § 112, Second Paragraph

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. **Claims 1-3, 5, 6, 8-13, 16 and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

5. The language of Claim 1 is indefinite because it is unclear as to whether the carbonyl-containing group and the nitrogen-containing group need to be present in the same side chain or whether they can also be present in different side chains. ✓

6. The language of Claim 2 is indefinite because it is unclear what "the main chain moiety" would be in elastomer main chains which have a combination of different main chain moieties such as in the

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elected specie of an EPDM. Accepting that mol% is based on the monomer units forming the polymer (specification page 5), the language would be clear if "monomer units" was used instead of "moiety".

7. The languages of Claims 12-13 are indefinite because a Tg is dependent on how the Tg is measured and the conditions of measurement, which makes the metes and bounds of the claim uncertain.

A glass transition temperature (Tg) is known to be dependent on the method and conditions of measurement. For instance as discussed by Lee et al. (p. III-141, section (3)), concerning dynamic measurements and rate effects, Tg values differing by 20°C or more are obtained depending on the method and conditions of measurement. Even when the method is specified, the conditions of measurement are also important as for instance is set forth in the ASTM method for determining Tg by differential scanning calorimetry or differential thermal analysis (ASTM E 1356). Heating rates are known to alter results (see § 6.1), and whether the onset temperature or the midpoint temperature of the range over which heat capacity changes is also important (see Fig. 1, and § 10.7). As set forth in the test method "Any comparison of glass transition temperatures should contain a statement of how the test was run and how the value was obtained."

Claim Rejections - 35 USC § 102(b)/§ 103(a)

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

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2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. *Claims 1-3, 5, 6, 8-13, 16 and 17 are rejected under 35 U.S.C. 102(a/e) as anticipated by JP'527¹ or Chino'051², each as evidenced by Alger.* The English language abstract and a JAP machine translation have been used as an interpretation of the reference.

12. In the alternative, and specifically in regard to the elected specie of thermoplastic monomer, *Claims 1-3, 5, 6, 8-13, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP'527 or Chino'051, in view of Alger.*

13. JP'527 discloses thermoplastic elastomer compositions which undergo thermotropical cross-linking and de-cross-linking, which have side-chains with carbonyl-containing groups and heterocyclic amine containing groups (abstract, Claim 1). Suitable elastomer main chains include an EPDM ethylene-propylene rubber (¶ 0019). Incorporation of a carbonyl side-chain by reaction with maleic anhydride is taught and is also exemplified with other main-chain polymers (e.g., ¶ 0014, 0023, 0039, 0079). 3-Amino-1,2,4-triazole is taught to be one of the preferred heterocyclic amine used to introduce the heterocyclic amine group by reaction with grafted anhydride group (e.g., ¶ 0025, 0029-0032, 0042). Such a composition with a polyisoprene polymer is exemplified in the examples (¶ 0079). It is also taught that the side chain moieties are in the range of 0.1 to 30 mole%, preferably 1-10 mole%, based on the monomer unit criteria (¶ 0074, 0075).

14. Chino'051 discloses compositions comprising an elastomer having at least two functional groups in a molecule, which cross-link by formation of a H-bond, and wherein one of the groups is a carbonyl group and the other is a heterocyclic amine group (e.g., claims 6-12, col. 25 line 65ff, and Examples 16-20). The elastomer constituting the main chain includes specifically ethylene-propylene-diene rubbers, which makes its use as the main-chain polymer readily envisaged (col., 18, line 59 to col. 19, line 6, and col. 27, lines 38-43). As above, incorporation of a carbonyl side-chain by reaction with maleic anhydride is taught and is also exemplified with other main-chain polymers, and 3-amino-1,2,4-triazole is one of the

¹ Rejected under 35 U.S.C. § 102(a).

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most preferred heterocyclic amines which is incorporated by reaction with the anhydride group (e.g., col. 28, line 33 to col. 30, line 50). Such a composition with a polyisoprene polymer is specifically taught at col. 29, lines 29-55 and is exemplified in Example 16. It is also taught that the side chain moieties are in the range of 1 to 30 mole%, preferably 1-10 mole%, based on the monomer unit criteria (col. 32, lines 3-13).

15. Although neither JP'527 nor Chino'051 disclose the Tg of the elastomers, it would be well known to those of ordinary skill in the art, as for instance as taught by Alger (p 503), that the rubbers on which the elastomers are based are rubbers and elastomeric because they are somewhat above their glass transition temperatures at ambient temperatures. Thus, they would clearly have Tg's below 25°C. Further, although neither JP'527 nor Chino'051 disclose the percentage of diene monomer in the EPDM, it would have been well known that an EPDM rubber typically contains only a few percent of diene monomer as evidenced by Alger (page 187), which would be within the limits of instant Claim 2. As Alger (p.187) also teaches that ethylenenorbornene (EBN) is the most common diene monomer to use in an EPDM rubber, such would also have been readily envisaged by one of ordinary skill in the art.

16. In the alternative an ethylene-propylene-EBN EPDM, containing a few percent of EBN would have been obvious to use as the EPDM in compositions taught by JP'527 or Chino'051 as such is common in EPDM rubbers as evidenced by Alger.

Art of Interest/Technological Background

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Auda, Benfameo, Chino'952 and Nalesnic each teach compositions which may be used in a future rejection of non-elected species of the invention. Depending on the content of the priority documents, Onizawa may also be a reference which could be used to reject non-elected species of the instant invention.

Future Correspondence

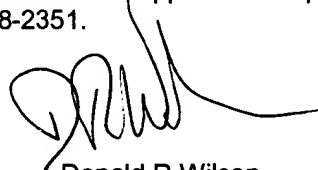
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donald R Wilson whose telephone number is 703-308-2398.

² Rejected under 35 U.S.C. § 102(e).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on 703-308-2450. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications. The unofficial direct fax phone number to the Examiner's desk is 703-872-9029.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 308-2351.

A handwritten signature in black ink, appearing to read 'DRW', with a long horizontal flourish extending to the right.

Donald R Wilson
Primary Examiner
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